

3(amended), 5(amended), 6(amended), 7, 9(amended),
10(amended), 11, 12(amended), 13, 14(amended), 15(amended),
16(amended), 17, 18(amended) and 19(amended).

After amendment, the claims remaining in the application are 1(amended twice), 3(amended), 7, 9(amended), 10(amended), 11, 12(amended twice), 13, 14(amended), 15(amended), 16(amended), 17, 18(amended), 19(amended) and 20.

The claims stand under rejection and objection for various reasons.

Claims 1, 3, 5-7, and 9-19 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention.

Claims 1 and 12 (and their dependent claims) stand as being indefinite for "cross linked polymer", "crosslinker" and "impact modifier", which may become with the incorporation of claim 6 limitation for the "crosslinked polymer" and "crosslinker", and claim 5 limitation for the "impact modifier" in claims 1 and 12.

The Applicants understand this rejection to mean that when terms used in Claims 5 and 6 are considered with claims from which they depend, they become indefinite. In response, the Applicants have deleted Claims 5 and 6.

The Examiner points out the obligation under 37 CFR 1.56 to point out the inventor and invention date of each claim that was not commonly owned at the time a later

invention was made in order for the Examiner to consider the applicability of 35 USC 103(c) and potential 35 USC 102(f) or (g) prior art under 35 USC 103(a).

All the claims in the present application are commonly assigned and have the same inventorship.

Claims 1, 3, 5 - 7 and 9 - 19 stand rejected under 35 U.S.C. 103(a) as being unpatentable over USP 5,242,968 (MINGHETTI), USP 5,304,592 (GHAHARY) and USP 5,130,374 (COZENS).

The Examiner advised that the Applicants' arguments filed June 22, 2001 have been fully considered but are not persuasive.

The Applicants have reviewed the cited art and the Examiner's comments. The Applicants believe that the references, individually or jointly, do not teach, suggest or disclose the present invention.

The present invention is directed to a re-processable thermoplastic granite-appearing resin. In particular, the present invention relates to a composite plastics composition comprising a particulate crosslinked polymer dispersed within a thermoplastic matrix. The crosslinked polymer (a) comprises 10 to 45 weight percent of the composite plastic composition, (b) has a particle size substantially from 0.2 to 1.2 millimeters, (c) is comprised of 0.1 to 15 weight percent inert filler and 0.1 to 20 weight percent crosslinker, based on the total weight of crosslinked polymer, and (d) is visually differentiable from

the thermoplastic matrix. The thermoplastic matrix (a) comprises 50 to 100 weight percent poly(alkyl (meth)acrylate) and zero to 50 weight percent impact modifier, based on the weight of thermoplastic matrix. The impact modifier is a multi-stage sequentially-produced polymer comprising at least three stages in a sequence of a non-elastomeric first stage, an elastomeric second stage and a non-elastomeric third stage. The Applicants have found, unexpectedly and surprisingly, that this composition is capable of being extruded or injection molded multiple times. Such granite-appearing compositions are not disclosed, taught or suggested in the prior art.

MINGHETTI teaches a method of making granite sheet by cell casting process. While the granite sheet can be thermoformed into final product, it cannot be extruded or injection molded as can the composition of the present invention.

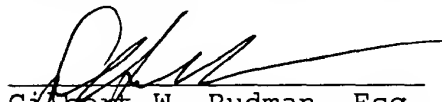
GHAHARY teaches that the combination of thermoplastic and thermoset materials for the particles is critical to suspend the particles in liquid thermoplastics. In the present invention crosslinked thermoset particles are used to create granite-appearing articles. The crosslinked thermoset particles can sustain the severe shearing of multiple passes through extrusion and molding. The GHAHARY particles, a combination of thermoplastic and thermoset materials, can be extruded once to form pellets but cannot

sustain the shearing resulting from multiple passes through extrusion or injection molding.

COZENS discloses rigid polymer or copolymer articles that have a matt surface. However, this reference does not teach, suggest or disclose the presently claimed invention which is directed to a composition having a granite appearance which is capable of multiple passes through extrusion or injection molding.

In view of the above, the Applicant believes that the claims herein should now be allowable to the Applicant. Accordingly, reconsideration and allowance are requested.

Respectfully submitted;


Gilbert W. Rudman, Esq.
Attorney for the Applicants
Reg. No. 27,589

Date: 1/14/02

ATOFINA Chemicals, Inc.
Patent Department - 26th Floor
2000 Market Street
Philadelphia, PA 19103-3222
Tel (215) 419-7636
Fax (215) 419-7075

Attachment:

Marked Version of Proposed Amended Claims

Applicant: Yang, S.
Serial No.: 09/445,844
Filed: 12/15/99
For: Plastic Compositions Having Mineral Like
Appearance



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Marked Version of Proposed Amended Claims

1. (amended twice) A composite plastics composition comprising a particulate crosslinked polymer dispersed within a thermoplastic matrix, wherein:

(a) the composite plastics composition comprises 10 to 45 weight percent of the crosslinked polymer, based on the weight of the composite plastics composition, and the crosslinked polymer has a particle size substantially from 0.2 to 1.2 millimeters;

(b) the crosslinked polymer comprises 0.1 to 15 weight percent inert filler and 0.1 to 20 weight percent crosslinker, based on the total weight of crosslinked polymer; and

(c) the crosslinked polymer is visually differentiable from the thermoplastic matrix, wherein the thermoplastic matrix comprises 50 to 100 weight percent poly(alkyl (meth)acrylate) and zero to 50 weight percent impact modifier, based on the weight of thermoplastic matrix and wherein the impact modifier is a multi-stage sequentially-produced polymer comprising at least three stages in a sequence of a non-elastomeric first stage, an elastomeric second stage and a non-elastomeric third stage, and wherein

the composition is capable of multiple passes through extrusion or molding.

~~CANCEL 5. (amended) A composite plastics composition according to claim 1 wherein the multi stage polymer is an emulsion polymer comprising monomer units of methyl methacrylate in the first stage, monomer units selected from one or more of butadiene, styrene and (C₁-C₈)alkyl acrylates in the second stage, and monomer units selected from one or more of (C₁-C₄)alkyl methacrylates, styrene and acrylonitrile in the third stage.~~

~~CANCEL 6. (amended) A composite plastics composition according to Claim 1 wherein the crosslinked polymer comprises 90 to 99.5 weight percent monomer units selected from one or more of vinylaromatic monomer and (meth)acrylic monomer and 0.5 to 10 weight percent crosslinker, based on the weight of crosslinked polymer, wherein the crosslinker is selected from one or more of allyl methacrylate, ethylene glycol dimethacrylate and divinylbenzene.~~

12. (amended twice) A process for preparing a composite plastics composition comprising:

(a) preparing a crosslinked polymer comprising 0.1 to 15 weight percent inert filler and 0.1 to 20 weight percent crosslinker, based on the weight of crosslinked polymer;

(b) comminuting the crosslinked polymer to particles having a particle size substantially from 0.2 to 1.2 millimeters;

(c) dispersing 10 to 45 weight percent of the particles of crosslinked polymer within 55 to 90 weight percent of a thermoplastic matrix by a heat processing treatment; and

(d) recovering the composite plastics composition as a particulate material,

wherein the thermoplastic matrix comprises 50 to 100 weight percent poly(alkyl (meth)acrylate) and zero to 50 weight percent impact modifier, based on the weight of thermoplastic matrix and

wherein the impact modifier is a multi-stage sequentially-produced polymer comprising at least three stages in a sequence of a non-elastomeric first stage, an elastomeric second stage and a non-elastomeric third stage, and wherein the composition is capable of being extruded or injection molded.

20. A composite plastics composition comprising a particulate crosslinked polymer dispersed within a thermoplastic matrix, wherein:

(a) the composite plastics composition comprises 10 to 45 weight percent of the crosslinked polymer, based on the weight of the composite plastics composition, and the crosslinked polymer has a particle size substantially from 0.2 to 1.2 millimeters;

(b) the crosslinked polymer comprises 90 to 99.5 weight percent monomer units selected from one or more of vinylaromatic monomer and (meth)acrylic monomer and 0.5 to 10 weight percent crosslinker, based on the weight of

crosslinked polymer, wherein the crosslinker is one or more of allyl methacrylate, ethylene glycol dimethacrylate and divinylbenzene; and

_____ (c) the crosslinked polymer is visually differentiable from the thermoplastic matrix,

wherein the thermoplastic matrix comprises 50 to 100 weight percent poly(alkyl (meth)acrylate) and zero to 50 weight percent impact modifier, based on the weight of

thermoplastic matrix and

wherein the impact modifier is a multi-stage sequentially-produced polymer comprising at least three stages in a

sequence of a non-elastomeric first stage, an elastomeric second stage and a non-elastomeric third stage, and

wherein the composition is capable of multiple passes through extrusion or molding.--